

Federal Executive Institute Charlottesville VA June 2019

- Voluntary Presentation to FEI Colleagues –
- Power Point Followed Rural Japanese Driverless Bus Video – 2017

Rural Japanese Driverless Bus

Consortium


Japan Yahoo

Softbank (Large Owner of Sprint-Overland Park KS)

Japanese Government

Currently Testing

Revenue Service Date - 2020

A woman with short dark hair is shown in profile, looking out of a window. The background outside the window is filled with out-of-focus autumn foliage in shades of yellow and green. The woman is wearing a dark jacket with a light-colored geometric pattern.

バスがまた、 通るようになったから

平成28年度 スマートモビリティシステム
研究開発・実証事業（経済産業省）
コンセプトムービー

How Many of You Ride Transit?

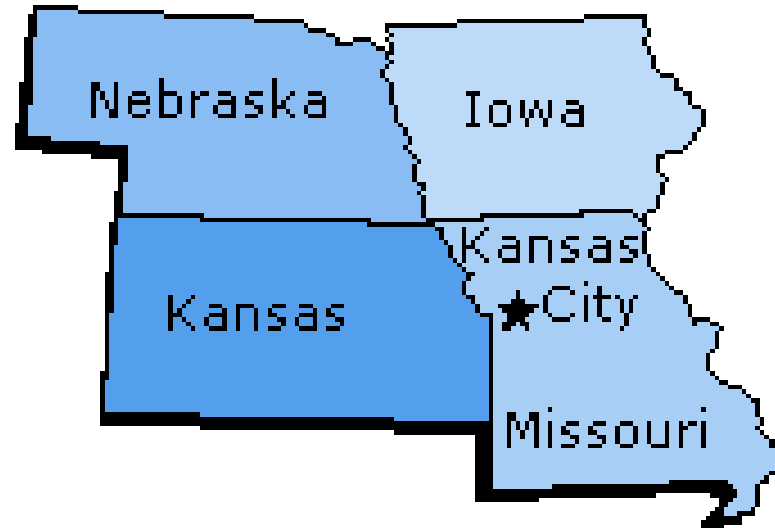
- Make You Feel Nervous?
- What if in Urban Setting, Make You Nervous?
- What if like me – riding bus on 25 mile commute for 21 years and:
 - What if in rush hour for PM route the driver became almost paralyzed from nervousness
 - What about my bus driver running a red light and I see bus running with green screech to halt one foot from my window
 - All of these made me a bit nervous - I and other passengers reported all these occurrences which were life threatening and drivers replaced
 - I think automated driverless technology will avoid such incidents and improve safety - hopefully

FEI Executive Session

“Driverless Automated Transit”

What is Happening with
Driverless Automated Transit in FTA Region 7

Missouri, Iowa, Nebraska, Kansas, and Illinois (parts of)



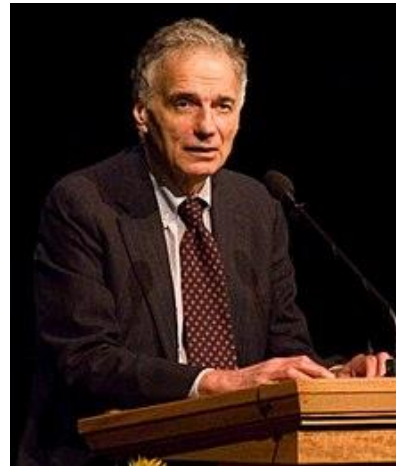
FTA Region 7 Participating in “Get On Board Transit Day” April 2019



Before Talking About Automated Transit in FTA Region 7

Back Up a Bit

Remember Ralph Nader?
1965 – “Unsafe at Any Speed”



“Unsafe at Any Speed, 1965” – Nader authors critical look at safety record of American auto manufacturers

Led to passage of “Highway Safety Act of 1970”

Which in turn led to creation of new US DOT Mode in 1970 – National Highway Traffic Safety Administration

Fast Forward to Present

- Private Industry and Universities Including University of Kansas – (more later) working on driverless vehicle technology:
 - Major Focus is Automobiles
 - Long Distance Trucking
 - Railroads
 - Transit (not aware of any streetcar, light rail or commuter rail)

US DOT Secretary Chao's Priorities



Safety Technology

Secretary's Office Develops Regulations Re Automated Vehicles

Unlike 1965 - NHTSA Created After the Fact to Regulate Auto Safety Problems

Secretary Chao Being Proactive Regarding Oversight of Driverless Technology

October 2018
Secretary Chao Releases AV 3.0 – Note 5.0 is Fully AV
Multi Modal
Region 7 Sent Hard Copies to our 56 Transit Systems



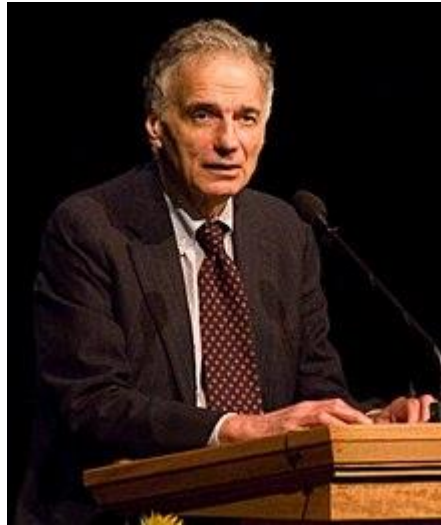
U.S. Department of Transportation

Automated Vehicles 3.0

***PREPARING FOR THE FUTURE
OF TRANSPORTATION***



Ralph Nader Weighs In On Automated Vehicles



Capitol Hill Workshop
Washington DC
September 2016

Spike Upwards in Traffic Deaths in 2015

FHWA and other Modes Tried to Figure Out Why

At 2016 Workshop Ralph Nader Gives Talk on Political Activism at Local Level

I changed subject - asked Ralph Nader if Automated Driverless Vehicle Technology would lower fatalities. I remember he was behind auto safety in the 60s

He said NO WAY – WAY TOO COMPLICATED – next question

Well, since workshop, national fatalities from crashes + 40,000 each year since 2015

Let's Focus on Automated Driverless Transit

Remember – This is Cutting Edge and Safety Standards will be needed before Implementation

FTA HQ TRI Research and Innovation – the T stands for “The”
In Charge of Automated Transit

Shuttles

Bus Storage Yard

Rural Transit

Focus on Region 7 - Familiar
With These Projects

Shuttles

Bus Storage Yard

Driverless Shuttles in FTA Region 7

Kansas City MO – KS Kansas City Area Transportation Authority
Innovations Team:



Planning 2 Mile Driverless Shuttle on 11th and 12 Street One Way Pair

Connecting East Village Transit Center to Grand Avenue Transit Center in Center of Downtown KC

Rush Hour – 6 Minute Headways, Non Rush Hour 15 or 30 Minute Headways

Driverless Shuttles in FTA Region 7



Lincoln NE – University of Nebraska – Pilot Driverless Shuttle connecting Downtown Lincoln to University's Central Campus

Pilot Completed 2018 – will be seeking 2019 BUILD – “Better Utilizing Investments to Leverage Development” Discretionary Funding. In High Recommended category last year – Secretary selects from this pool.

Talked to GM two weeks ago who said he is resubmitting – NOFO due mid July.

So anticipate going up to Lincoln to give guidance on NOFO in July

Bus Storage Yard

Typically after last run – bus driver comes into the yard

Turns over the bus to yard employee who:

- * Fuels bus
- * Drives bus through exterior bus wash and interior cleaning/vacuuming
- * Positions bus for next day's route

Big Vehicles: Lot of Bumps and Scrapes Against Bollards, Walls and Other Buses

Automated Driverless Movement of Buses In Storage Yard

MetroLINK in Rock Island Illinois

Working with two other transit systems and FTA HQ to develop automated movement of buses in the yard

Frees up yard maintenance personnel to focus on actual maintenance/cleaning versus driving buses around yard and having fender benders with bollards, etc.





University of Kansas Deep Icar Project



Programming Reduced Scale Vehicles – August 2018 Conference, Hakodate Japan

Malware Effects on Deep Icar Vehicle – April 2019 Conference, Montreal Canada
(University of Kansas Paper Finished 3rd to Two Papers from Penn)

Continued Research of Malware on Programming – July 2019, Stuttgart Germany



Driverless 5.0 Automated Vehicles Are Coming Including Buses

Ford – True Self-Driving by 2021

Honda – Self-Driving on the Highway by 2020 (Olympics)

**Renault-Nissan – 2020 for Autonomous Cars in Urban Conditions, 2025
for Truly Driverless Cars**

Volvo – Self-Driving on the Highway by 2021

Hyundai – Highway 2020, Urban Driving 2030

BMW – Fully self-driving possible by 2021

We Will Find Out Pretty Soon Who Is Right!

Or Maybe It's Too Complicated Like Ralph Nader Says

Missouri Highway Patrol – Missouri DOT Safety Conference - 2016

- Over 40,000 Crash Fatalities Annually or 110 Fatalities Daily in the US
- Missouri Patrol and Missouri DOT Safety Goal – Zero Deaths from Crashes in the Show Me State
- Maybe AV Technology Will Help Missouri Meet Its Goal

End With Positive News

Congrats Niece Clara!

Today Is Her First Day

Regional Transit District (RTD) Denver



Update from FEI Presentation in 2019



University of Iowa Rural Automated Transit Pilot



University of Iowa Rural Automated Transit Pilot

- Pilot Ended May 2023 – Funded by OST Discretionary Grant Overseen by FTA HQ
- 46 Mile Loop – Rural Iowa Outside Iowa City
- Observations from Final Loop Run:
 - Driver had to navigate through urban areas in Iowa City.
 - Automation did not understand Left Turns – Big Surprise
 - Rural Areas – No Problem. Passengers less tense than in urban Iowa City
 - Optics did not steer vehicle around stationary or moving object (Amish horse and buggy) on side of the road.
 - Stopping points in rural areas – automation handled easily.

May 2023 Pilot Ended – What is Next? Steve Wants to Know





Thank You FEI For Opportunity to Present

Questions - Comments